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**Can Science Tell Us That We Smell?
Comments on Richardson's "Favour, Taste, and Smell"**

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In "Flavour, Taste, and Smell" (forthcoming in *Mind and Language*, June 2013), Louise Richardson discusses the question of whether scientific findings could confirm or disconfirm our judgments about which sense we are using to perceive the world on particular occasions. Her answer is that, so long as non-naturalism about the senses is a theory that should not be dismissed, then we are not in a position to assert that science can inform us about that matter. Moreover, she argues that non-naturalism should not be dismissed, and so we are not in a position to assert that science can inform us about which sensory modality we are using.

I will make three points about Richardson's discussion, each of which will form sections, 1, 2 and 3, respectively, of this paper. The first point is that Richardson is not careful enough in setting up the debate. She does not keep separate the question of whether science can inform us about the type of experience that we are having (what I will call "the experiential question") from the question of whether science can inform us about the type of sensory modality that is being used (what I will call "the modality question"). I will explain what this distinction is and illustrate how she fails to keep these questions clear in the initial part of her paper. Nevertheless, in the rest of the paper, Richardson does seem to be addressing the modality question.

Second, I show that Richardson's conclusion that non-naturalism entails that that science cannot inform us about which sensory modality we are using is false. This point is very important for it amounts to the rejection of the main claim that Richardson argues for in her paper. Therefore, considerations about the plausibility of non-naturalism cannot be used in the manner Richardson suggests to argue for a negative answer to the modality question.

The third point is that I do not find Richardson's non-naturalist response to the question of how many senses we have convincing. Moreover, I am concerned that she thinks, as I suspect some other non-naturalists do, that the ordinary man and woman on the street are far less sophisticated than they are. I argue that she provides us with no good reason to think that there are either beliefs about the number—actual or possible—of the senses or about individuating the senses that are not open to revision.

* I would like to thank Clare Batty for her insightful comments on an earlier draft of this paper.

§ 1

Richardson begins her paper by discussing an example of the question that interests her. Addressing this question forms the core of her paper. The example is “the puzzle of the sweets”. Suppose, for now, in line with Richardson, that: (a) in general we think of flavours as tasted and (b) science discovers that when people are eating sweeties and their noses are held closed, they can only distinguish some components of their flavour, components like sweetness and sourness. It is only when their noses are not held closed that they can distinguish the fruit flavour of the sweeties, flavours such as cherry or raspberry. Richardson asks whether science could ever tell us which sense was being used to perceive something—in the example, whether science could ever tell us which modality we are using to determine which fruit flavour the sweeties have. In particular, could science ever confirm our judgment that we taste the fruit flavour or could it overturn that judgment and tell us that we are wrong and that we smell the fruit flavour? In the example, Richardson provides us with two possible answers to the question of what holding one’s nose has done:

First answer: what’s missing when you hold your nose is one aspect or part of tasting. Holding your nose, on this view, impairs your ability to taste the flavours of the sweets.

Second answer: what’s missing is something olfactory—an olfactory experience, or an olfactory component of the multimodal experience of flavour. Holding your nose, accordingly, prevents the sense of smell from playing its usual role in flavour perception. (p. 2)

One can identify two questions that these answers might be answers to. One is: when one’s nose is blocked and one does not experience the fruitiness of the sweetie, is what is missing the use of the sensory modality of smell. (I will call this “the modality question”.) Another question is: when one’s nose is blocked and one does not experience the fruitiness of the sweetie, is one missing an olfactory experience or an olfactory component of the experience. Unlike the former question which addresses which sensory modality produced the experiences in question, or was in operation, this question asks about that experience in and of itself. Is the experience, or are experiential components of it (the fruity ones), ones that are associated with smell? Does the experience have olfactory representational content and phenomenal character? (I will call this “the experiential question”.) Richardson elides the difference between the experiential question and the modality question in her statement of the first answer that she gives to the puzzle above. In her second answer, the first sentence seems to seek to answer the experiential question, while the second sentence seems to provide an answer to the modality question.

These two questions are not the same, and one can see that this is so because, given certain assumptions, different answers could be given to them. To see this, we need to appreciate that there are, roughly, four competing theories of how we ought to individuate types of sensory modalities (as, later in her paper, Richardson notes). (See also H. P. Grice “Some Remarks About the Senses”, in R. J. Butler (ed.), *Analytical Philosophy, First Series*, Oxford University Press, 1962.)

One theory says that the modalities can be individuated by what is represented by the experiences produced by that modality. For example, vision is the modality defined by the fact that coloured forms at a distance from the body are represented; olfaction is the modality by means of which smells or chemicals in the air are represented, and taste is the modality by means of which tastes or flavours or chemicals in solution are represented. On this theory, the answer to the modality and the experiential question will be the same, for it is the nature of the experience that determines the nature of the modality in operation.

A second theory says that the modalities can be individuated by the nature of the phenomenal character of the experiences that are produced by them. For example, vision is the modality that produces experiences with visual phenomenal character; olfaction is the modality that produces experiences with smell phenomenology; and taste is the modality that produces experiences with the phenomenology of taste. In order to avoid circularity in this last theory, one needs to be able to give a specification of the phenomenology of those types of experiences without saying simply that they are visual, smell or taste experiences. There are two ways I know to do that. One is to specify the phenomenal character of an experience, by saying what it was an experience as of—that is, what the experience represents. In this respect, the phenomenal character criterion could turn out to look very much like the representational criterion. (Indeed, whether the nature of the phenomenal character of an experience can be fully specified just in terms of what the experience represents is a point much disputed in the philosophy of mind.) So one might specify a class of experiences with a certain phenomenal character by specifying a class of experiences that represent certain things. And then one could individuate the sensory modalities by claiming that each produces experiences that form different classes. Another way one might specify the sort of phenomenal character that all the experiences of one sense must have is to specify one type of experience and then cite a group of experiences related to it, say by phenomenal similarity, spelled out in terms of indiscriminability. (See A. Clark *Sensory Qualities*, New York: Oxford University Press, 1993.) By the lights of this second theory, like that of the first, the answer to the modality and the experiential question will be the same, for it is the nature of the experience that determines the nature of the modality that is being used.

A third theory says that the modalities are individuated by the nature of the sensory organ (and perhaps brain processing) being used. For example, vision is defined as the modality that uses the eyes; olfaction the modality that uses the nose; taste the modality that uses the tongue; and so on. Unlike the first two theories, this theory predicts that the answers to the modality question and the experiential question can come apart, for a sense organ associated with one sense could produce an experience that had a representational content and phenomenal character associated with another sense. For example, the ear could produce an experience associated with vision. (One example of this happening is music-colour synaesthesia, in which stimulation of the ear not only produces experiences of music but also experiences of colour—experiences that have a representational content and phenomenal character associated with vision.) The

sensory organ theory would say that the modality being used is hearing, but the nature of the experience produced is visual.

A fourth theory says that the nature of the proximal stimulus is crucial for individuating the modalities. For example, vision is defined as the modality that has electromagnetic waves of certain wavelengths as its proximal stimulus; olfaction is the modality that has the proximal stimulus of certain chemicals in the air; and taste is the modality that has the proximal stimulus of certain chemicals in solution. According to this theory, the answer to the modality question and the experiential question can come apart for an experience with the representational content and phenomenal character associated with one modality could be produced by a proximal stimulus associated with another. (See the synaesthesia case described above.) In that case the answer to the sensory modality question and the answer to the experiential question would be different.

These considerations show that one should differentiate between the experiential question and the modality question, for if one thought that questions about the nature of the modality turned on just the nature of the proximal stimulus or the sensory organ and not at all on the nature of the experience, then one can give different answers to these questions. Thus, unless Richardson wants to defend the phenomenal character or representational criterion for individuating the senses, which she shows no sign of doing in her paper, she should be clearer about which question she is seeking an answer to.

One might think that it is obvious, given the discussion in the rest of her paper which focuses on the question of whether scientific findings could confirm or disconfirm our judgments about which sensory modality we are using, that Richardson is simply seeking an answer to the modality question. If so, it would be helpful at this crucial stage of setting up the debate if she were more precise. However, now that we can see that there are two questions here to be asked, one might wonder whether the evidence that Richardson brings to bear in answering the modality question is really evidence that is more suited to answering the experiential question, and thus whether she really means to investigate the modality question rather than the experiential question. I think that it is at least a teeny bit tempting to think that there are truths of folk psychology about the phenomenal and representational nature of experience, and a tiny bit tempting to think that science cannot inform one about those aspects of the nature of one's experiences, although those claims are by no means certain. The alleged subjectivity of the mental speaks in favour of thinking those things. Whether or not they turn out to be true, I think that there are far more reasons to think that science cannot address those questions than there are to think that science cannot tell us which sensory modality is in operation. (I will discuss why I think that the latter option is not tempting at all in sections two and three.)

The separation of the modality and the experiential question thus reveals a third answer to the puzzle about the sweets that Richardson does not consider: the sensory modality that one uses to detect fruitiness is olfaction, but olfaction causes a taste experience: an experience that represents a quality that is in the mouth or in the objects that are in the mouth. In light of this, I believe that

Richardson should be seeking an answer to both the experiential question and the modality question. And I would like to know to what extent she would alter the arguments in her paper when this distinction, and the different considerations that feed into deciding the answer to each question, are brought to her attention.

That concludes discussion of my first point regarding the set-up of the debate. In the rest of this paper, I will take Richardson to be asking the modality question, rather than the experiential question, and address her claims with respect to it. I will leave it to the reader to assess whether the experiential question can or cannot be addressed by science, even if, as I will argue contra Richardson, we have good reason to think that the sensory modality question can be.

§ 2

The second point that I wish to discuss is Richardson's claim that:

if non-naturalism is correct, scientific findings can't settle the puzzle about the sweets, since they can't tell us that flavours are perceived olfactorily. This means, in turn, that if non-naturalism is correct, then science cannot overturn the common-sense judgement that flavours are just tasted. (p. 12)

I argue that Richardson is wrong and that this claim is false. It is not the case that non-naturalism entails that scientific findings cannot confirm or disconfirm our judgments about which sense we are using to perceive the world on particular occasions.

According to Richardson we should take a commitment to non-naturalism to be a commitment to the idea that:

our everyday conception of the senses does not carry correctable, empirical commitments about how the senses are individuated. (p. 9)

Non-naturalism comes in two forms, says Richardson. There is the conventionalist form defended by Matthew Nudds ("The Significance of the Senses", *Proceedings of the Aristotelian Society*, 2004, 104(1): 31–51) that denies that the distinction between the types of senses exists independently of our practice of so distinguishing them. According to Nudds, the distinctions we make between types of senses are purely based on our interests and not on objective similarities and differences between ways of perceiving. There is also a non-conventionalist form of non-naturalism. Articulating the non-conventionalist form is a somewhat subtle matter.

First Richardson tells us that, according to non-conventionalist non-naturalism, some things have no "hidden nature" (p. 10). And we are told to take this to mean that "there is no question of our waiting to be told what makes them what they are by any science." (p. 10) There are two ways that one could go on to develop this idea. The first way would be to say that of some instance, there is no question of our waiting to be told by science that it is an instance of a certain type—if that type is one that lacks a hidden nature. If one wanted to claim of

some instance that it was an instance of a certain type then one would have to know (at least) two things. First, one would have to know which property the instance must have in order to be an instance of the type. Second, one would have to know whether the instance had that property. But this is not how Richardson develops the point; indeed she eschews this articulation of the thesis. This is made manifest when she considers an instance of perception that we may not know is one of the type smelling—a type that she believes has no hidden nature. She says that science could show us that the instance was an instance of smelling by revealing that it had some surface feature that we did not know it had before:

It is possible, on this view, that science might discover some instances of perception that have the surface feature that, on the everyday conception, is that in virtue of which we count something as smelling, for instance. (p. 11)

Thus, Richardson thinks that science could tell us that an instance was an instance of a certain type that lacks a hidden nature because, of the two conditions required to know this—knowledge of which property makes it an instance of a certain type and knowledge of what its properties are—science could tell us about the second of these. Science could confirm or disconfirm which properties an instance had.

The second way that one could develop the thought that “there is no question of our waiting to be told what makes them what they are by any science” is the one that Richardson adopts. The idea is that types that lack a hidden nature are such that we know, independently of previous or future science, what it is for something to be an instance of that type. For example, suppose that we think that what it takes for an instance to be an instance of a certain type—a type that lacks a hidden nature—is that the instance has property *p*. That we think *p* makes the instance the instance of that type cannot be altered by scientific findings. Science cannot show us that it is really property *q* that makes an instance an instance of that type. Richardson says:

What non-conventional non-naturalism will not countenance is that on our everyday conception, the features that individuate the senses are themselves up for scientific discovery. (p. 12)

Just to be clear, note that this is simply the first piece of knowledge that I identified above as one of (at least) two pieces of knowledge that one would need to have to have if one were to identify an instance as being an instance of a certain type. Richardson is thus claiming that if one holds that an instance is of a certain non-hidden type, one could go wrong by ascribing the wrong properties to the object and science could correct us, but we could not go wrong by thinking that it was property *p*, rather than property *q* that made the instance an instance of the type in question.

Therefore, to summarise, according to non-conventionalist non-naturalism, what science cannot do is tell us for each type of sense—types such as smell, touch and taste—what it is that makes an instance of perception an instance of the particular type that it is. Science cannot discover which property it is that makes instances of perception instances of one of the sensory

modalities, like smell, touch, taste, and so on. However, claims Richardson, according to non-conventionalist non-naturalism, science can inform us, when we didn't know before, that an individual instance of perception is an instance of smelling. It could do this by showing us that the instance had a surface feature that we did not previously know that it did.

Given this understanding of non-conventionalist non-naturalism, it is highly perplexing that Richardson goes on to say in the very next paragraph that:

if non-naturalism is correct, scientific findings can't settle the puzzle about the sweets, since they can't tell us that flavours are perceived olfactorily." (p. 12)

That just does not follow. Here is why. Richardson herself says that a non-conventionalist non-naturalist could hold a variety of views about what surface feature makes instances of a sense instances of the type of sense that they are:

The most obvious candidate for these surface features is some aspect of phenomenal character. But there are other options, too, such as the perceiving of certain properties rather than others, or the use of certain parts of the body (the ones we usually think of as sense organs) in perceiving, or perhaps some combination of factors like these." (p. 11)

Thus a non-conventionalist non-naturalist could hold that what makes an instance of perception one of the type olfaction is that it involves appropriate stimulation of the nose. In that case, if science discovered in the puzzle of the sweets that what we generally took to be an instance of tasting—because we took the tongue to be causally responsible—was in fact produced by means of the nose, then science would have discovered that the instance was not one of tasting but one of olfaction instead. In other words, this would be a case where science discovered:

some instances of perception that have the surface feature that, on the everyday conception, is that in virtue of which we count something as smelling (p. 11).

So science could show us, consistent with non-conventionalist non-naturalism, that the second answer to the puzzle of the sweets was the correct one. It could show us that "[h]olding your nose, accordingly, prevents the sense of smell from playing its usual role in flavour perception." (p. 2)

Only if one holds non-conventionalist non-naturalism together with a certain specific claim or claims about what individuates the sensory modalities can one resist the thought that science cannot confirm or overturn our judgment in the puzzle of the sweets. For example, if one held, in addition to non-conventionalist non-naturalism, that what makes some instance an instance of the operation of the taste sensory modality the fact that flavour is experienced, and one took that to be a fact that could not be overturned by science, then finding out that the nose was involved in flavour perception would be irrelevant to the sweetie case (at least if that was the only surface fact that one held to be true—see the following paragraph). But holding that is to hold a specific claim about what individuates the taste modality that is an optional addition to one's non-naturalistic theory. Non-conventionalist non-naturalism need not be combined with such a claim. Combined with other claims, such as what makes

some instance an instance of olfaction is that it is produced by the nose, or that it is produced by the proximal stimuli of odours or chemicals in the air, non-conventionalist non-naturalism is compatible with thinking that the second answer to the puzzle about the sweets is correct, and correct in light of new scientific findings. Therefore non-conventionalist non-naturalism does not entail that we cannot show that science can inform us about which sensory modality we are using.

What this case also brings out is that one might start off with what one takes to be several surface facts that are not open to revision but then realise that one is forced to revise at least one of the apparent surface facts. For example, one might start off believing the following to be surface facts:

- (a) fruitiness is a flavour,
- (b) flavour is only perceived by the modality of taste, and
- (c) anything perceived by means of the nose is perceived by the modality of smell.

If one then discovers that if one holds one's nose then one cannot experience fruitiness then one would face just such a decision. One would be forced to give up on one or more of the apparent surface facts. Of course which one or ones one should give up in such a situation is a difficult matter. But what the science would have shown is that at least one of them needs to be given up.

I think that the same points hold, *mutatis mutandis*, for conventionalist non-naturalism. Only when that view is combined with a certain view of what the conventions are for individuating the senses, does one reach the conclusion that science cannot affirm or correct our judgment about which sense is being used on a particular occasion. While it is true that according to all forms of conventionalist non-naturalism "we don't make the distinction [between the senses] in an attempt to pick out objective similarities and differences in the way that our perceivings are produced by the effect of the environment on our internal perceptual equipment" (p. 9), this does entail that the distinction that we make between the senses is not in fact one that picks out objective similarities and differences. What is crucial is that we are driven only by what matters to us in a certain way. But what matters to us could be conveying to people what sensory organ we are using, and such a feature is of course one that actually picks out objective similarities and differences between the senses, even if that was not our motivation for so selecting it. If one held such a view, then if science provided conclusive evidence that an instance of perceiving involved using the nose, and this overturned one's belief that the tongue was involved, then one would be committed to changing one's view about which sensory modality was being used to perceive. Thus conventionalist non-naturalism, as well as non-conventionalist non-naturalism, can hold that science can inform us about the puzzle of the sweets.

Thus, the conclusion of my second point about Richardson's paper is that she has not shown, as she takes herself to have done, that "if non-naturalism is correct, scientific findings can't settle the puzzle about the sweets, since they can't tell us that flavours are perceived olfactorily" and that "[t]his means, in turn, that if non-naturalism is correct, then science cannot overturn the common-

sense judgement that flavours are just tasted.” (p. 12) An argument for her conclusion would also have to rest on premises about what claims form the core conception of the senses that, according to non-naturalism, are not revisable. Richardson does not provide such a list of claims in her paper. Nor does Richardson provide an argument or reasons to think that certain claims cannot be revised, as I will argue in section three below. Without that, her claim that science cannot discover which property it is that makes instances of perception instances of the type of perception that they are, is groundless. Recall that this was the first piece of knowledge that I identified above as one of (at least) two pieces of knowledge that one would need to have to have if one were to identify an instance as being an instance of a certain type. And it was also the main claim that Richardson developed from the definitional statement of non-conventionalist non-naturalism that the senses have no hidden nature.

Moreover, even if Richardson provided a list of claims that it is reasonable to think are not revisable, she would still have to show that we would not be forced to revise one or more of them in light of contemporary science showing that they cannot all be held together, as in the example I outlined three paragraphs above. Furthermore, she would have to show that no scientific claim whatsoever—not just the claim made in the puzzle of the sweets—would cause us to revise which sensory modality we took to be operative in any case of perception. The magnitude and strength of the claims that would have to be established before Richardson could claim to have shown that science cannot inform us about which sensory modality we are using go far beyond those that she establishes in her paper.

§ 3

The third point that I want to make concerns Richardson’s stance on the question of how many senses there are and her motivation in this paper to partially defend non-naturalism about the individuation of the senses (at least to the extent to show that it should not be dismissed). I begin with her discussion of the question of how many senses we have.

Matthew Nudds (ibid.) claims that it is a fact of folk-psychology—a conventionalist fact that cannot be overturned by scientific investigation—that there are five and could only be five senses. Vision, hearing, touch, taste and smell are known as the Aristotelian five, as Aristotle promoted the view that there were just this number. I have argued (“Individuating the Senses”, in Macpherson, F (ed.) *The Senses: Classic and Contemporary Readings*. New York: OUP, 2011), contra Nudds, that this is not a fact of folk-psychology. First, I argue that ordinary people (the folk) and scientists would and do respond to new information about human and animal perceptual capacities by saying that there are more than five senses. These facts might include facts about other creatures’ sensitivity to things such as magnetic fields, and facts about human proprioception and equilibrioception. Indeed, the debate about the number of the senses goes back in writing to before Aristotle’s time, and has been one of recurrent discussion through out human history thereafter. (See K. M. Dallenbach “Pain: History and Present Status”, *American Journal of Psychology*,

1939, 52(3): 331–47 for a learned summary of just how much debate there has been.)

Second, I argued that the idea of the possibility of there being many different senses abounds in popular literature. Consider:

- X-ray vision
- mind-reading sense
- sixth sense—the ability to perceive the future, ghosts, and so on
- the Predator’s infrared perception
- the Terminator’s perception, which can analyze the composition of objects
- spider sense—the ability to perceive danger via a special tingling in the extremities

I maintain that these examples show that the folk are only too ready to countenance the possibility of other senses.

Richardson responds to these points by claiming that people’s responses to the scientific data and sci-fi literature do not “constitute evidence of our being disposed to revise our everyday conception of the senses” (p. 14) For if we ask people what they think or believe, it is just not clear to them and they may get it wrong: “folk judgement about the senses may not, as it were, be transparent to itself” (p. 12). In particular, she claims that although the folk and scientists say that they believe that there are and could be more than five senses, and cite what some of those are and could be, this is only a temporary state that they are in, and occurs just after they have been exposed to the new information or after they have read some sci-fi. They will quickly revert to saying, as they did before, that there are five and only five senses, and could be only five senses. So, claims Richardson, non-naturalism about the senses is not easily defeated by the sort of evidence that I cite above.

It is not clear to me whether Richardson thinks that people temporarily believe that there are more than five senses and then revert to their long-standing belief that there are and could only be five, or if she thinks that they never lose their long-standing belief and only pay “lip-service” to the thought that there could be more than five senses. (See p. 14.) While at times she suggests that people may say things and not believe them at all, her talk of there not being “a more long-term change in the judgements” people make, suggests that she thinks that there might be short-term changes of judgement. It seems to me that she had better hold the view that people are merely pay lip-service to the idea that there are more than five senses, for if people temporarily change their belief then such a belief is revisable in the light of new scientific evidence. And that is precisely all that the naturalist needs to make their case in this situation.

In any case, what is the evidence that people revert to having the belief that there are and could be only five senses either after temporarily judging that there are more or paying this idea lip-service? None is cited. I don’t in my everyday life. Am I that odd? I doubt it. I doubt whether Plato who thought that the sense of touch was three senses—pressure, temperature and heat—reverted to the belief that there are only five senses on his days off, if he ever had the

belief in the first place. Likewise, consider those who took part in the historical debate about which senses there are. Their debate was based on data from first person experience. Consider, in particular, those who held that there is a sense of hunger and thirst, of the fullness of the bladder. I know of no evidence that suggests that those participants ever had the belief that there are and could be only five senses, or that if they did they reverted to that belief when they left their studies. Nor do I think that the many contemporary philosophers and scientists that I talk to and read on a regular basis about these matters revert, at the weekends, to the belief that there are five and could be only five senses. The thought that this is what people return to believing seems to me to ascribe to them the mentality of a juvenile who has been told that there are five senses at school and repeatedly parrots this back, unable to retain new beliefs gained from reading literature and science. But this is just not what people are like. The idea that the folk and scientists are simple unsophisticated creatures about perception with deep-seated Aristotelian beliefs seems to me only a philosopher's concoction.

And even if there are people who revert to claiming that there are and could be five and only five senses after proclaiming otherwise due to reading some science, as Richardson says she does, why should we take the former evidence, rather than the latter, as the evidence of their settled and long-standing belief? To make it clear why one might not want to do that, consider a person who knows a little bit of astronomy and who knows that the Earth revolves around the Sun, and not vice versa. In the classroom, or after reading some affirming scientific facts about the motions of the heavenly bodies, such a person will no doubt say that the sun is stationary and that the Earth revolves around it. Yet, in other contexts they may affirm the fact that the Sun rises in the morning, travels across the sky and then moves down below the horizon in the evening. However, the fact that they are willing in an every-day situation to affirm such propositions does not mean that we should think that they really believe that the Sun moves and the Earth stays still. On the contrary, most people would explain away this talk as idiom or something close to it. Idioms are phrases that have both a literal and a figurative meaning. "She pulled his leg" literally means that she held his leg and tugged it. But when people assert this, they don't intend the literal meaning, just the figurative meaning, which is that she poked fun at him by suggesting something to him that was false or exaggerated. When people knowledgeable of astronomy speak of the Sun rising and traveling across the sky they don't mean this literally. They mean it figuratively, or something close to figuratively, which is to say that to an observer on Earth, this is what appears to happen during the course of a day. Likewise, consider people who have encountered sci-fi and science and have affirmed that there are or could be more than five senses. If, subsequently, they say that there are just five senses, I suggest that they intend to mean that there are five main or paradigm human senses, or that there are five commonly noted and agreed upon senses.

Not only am I unconvinced that Richardson is right that it is a tenet of folk psychology which cannot be revised that there are five and only five senses, I am highly sceptical that there are beliefs about the individuation of the senses that are part of folk-psychology that cannot be revised. Richardson tells us that the

belief that “flavours are just tasted” (p. 4) is one such, while the belief that the use of the nose is sufficient for the operation of the modality of smell (c.f. p. 6) and the belief that “what’s happening when flavours are perceived is in the mouth” (p. 19) are not. These latter revisable beliefs she calls “peripheral”, while the ones that cannot be revised are “non-peripheral” (p. 19) or part of the core-conception of the senses. However, she proffers no reason to categorise these beliefs in this way. Indeed, concerning the last of these beliefs, the best Richardson can do to convince us that it can be revised is to say that “without reason to think that the ... [belief] is non-peripheral to our everyday conception, the view that it is peripheral remains plausible” (p. 20). Given this, I see no reason to think that “flavours are just tasted” is part of the core-conception that cannot be revised and is not peripheral. I can see no good reason for Richardson to favour this fact over the others.

More generally, I can see no motivation whatsoever for thinking that there are beliefs about the number of the senses, or beliefs about the individuation of the senses, that cannot be revised. Certainly, there will be beliefs that we hold more strongly than others. And there will be ones the giving up of which will be resisted more than others. But the thought that there are some core beliefs that simply cannot be given up is ungrounded. No doubt when science tells us some fact—for example, that certain flavours, such as the fruit flavours, cannot be detected when the nose is not operative—science does not tell us which of the common beliefs that we may be inclined to hold we should give up, if giving up one or more is required. Should we give up that flavours are tasted or should we give up that use of the nose is use of the modality of smell and that what’s happening when flavours are perceived is in the mouth? Settling that question should be a matter of doing least damage or revision to our beliefs. If we have to revise our beliefs in light of science then it seems that we should heed Quine’s advice (“Posits and Reality”, reprinted in *The Ways of Paradox and Other Essays*, Cambridge, M.A.: Harvard University Press, 1955) and seek to maximize simplicity, familiarity, scope, fecundity, and conformity to experience, while making the smallest possible number of changes to the fewest core beliefs we can that will suffice to reconcile the beliefs with experience. However, doing that may involve changing core strongly held beliefs. One can imagine a situation in which one belief, which was agreed by all to be very strongly held, should be given up to spare a large number of less strongly held, more peripheral, beliefs.

When one thinks more generally about beliefs that philosophers have thought not to be revisable by any empirical evidence, one thinks of beliefs concerning fundamental logical principles, such as bivalence, and beliefs concerning mathematics. But many people have challenged whether even any of these are immune from revision. (See Quine, *ibid.*) If Richardson thinks that one or more beliefs about our senses falls into this category, then Quine would say that it or they can be preserved come what may, if we are willing to make enough other changes in our web of belief. But the question is why we should privilege such beliefs. In the case of logic, some answers can be adduced. Logical beliefs seem not only to be beliefs that form the web but the beliefs that tie the web together in an inferential structure in the first place. Of course whether this actually warrants holding beliefs about logic are special is arguable. However, no such reasons seem forthcoming in the case of beliefs about the sensory

modalities, not even in the case of the belief that “flavours are tasted”. But those are precisely the kind of reasons that are required if a non-naturalism is to be found even plausible—even a contending theory—as Richardson argues it is.

Thus I conclude that we have no good reasons to hold that non-naturalism is well motivated, and Richardson’s claims about people’s beliefs about the number and the individuation of the senses, are highly implausible.

§ 4

In summary, I first argued that Richardson does not keep separate the question of whether science can inform us about the type of experience that we are having (the experiential question) from the question of whether science can inform us about the type of sensory modality that is being used (the modality question). I suggested that she should be considering both, and wondered whether her arguments were not better suited to answering the experiential question, rather than the modality question, which she claims to be addressing. Second, I showed that it is false that non-naturalism entails that we cannot show that science can inform us about which sensory modality we are using. This point is vital for it amounts to the rejection of the main claim that Richardson argues for in her paper. Third, I argued that Richardson provides us with no good reason to think that there are either beliefs about the number—actual or possible—of sensory modalities or beliefs about individuating the senses that cannot be revised, and I have identified reasons to strongly resist her claims about what people believe about these matters.